# Marketing Requirements:

## Must

1. Be externally powered
2. SPI network capability
3. I2C network capability
4. CAN 2.0B network capability
5. UART network capability
6. 1 - DAC output
7. 8 - ADC inputs
8. USB-FS connection
9. USB-HS ULPI connection
10. SWD debug connection
11. Be able to reset device via hardware
12. External CLK???
13. Visual status indicators
14. Edge connectors to all I/O pins
15. Easy to manufacture
16. Robust and reliable

## Should

1. More than one SPI networks
2. More than one I2C networks
3. More than one CAN 2.0B networks
4. Have no less than 10 ADC inputs
5. Group I/O pins by function
6. Ethernet connection
7. SDIO interface
8. More than one DAC output

## May

1. Have more than one UART
2. No less than 15 ADC inputs
3. Be battery powered

# Engineering Requirements:

## Performance

* High Speed interface to PC at up to 480-Mbps
* Provide ADC, DAC, SPI, I2C, UART, CAN, SWD, and GPIO connectivity

## Functionality

* Use open source software and firmware
* Use cross-platform software libraries

## Energy

* Must meet power specifications of USB 2.1 (500 mA, 5.0 V)
* Provide a connection to a 5.0 V DC power supply

## Cost

* Target price of $40 per board

## Health and Safety

* Implement safety checks and failsafe measures to shutdown system as required
* Should power up in a state that will not inadvertently actuate connected systems

## Manufacturability

* Must be able to be assembled by hand
* No components smaller than 0402
* Device will be a 4-Layer PCB

## Operability

* Should be able to survive a fall of up to 1 meter
* Should be able to operate in a temperature range of 0-75 C

## Reliability

* Circuit protection against ESD, over-voltage, and over-current